the exons set forth in SEQ ID No. 3 under conditions of at least moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors; and

d) a sequence of nucleotides degenerate with the sequence of nucleotides of c).

5. (Amended) The isolated nucleic acid molecule of claim 1 that comprises a sequence of nucleotides that encodes the sequence of amino acids set forth in SEQ ID No. 4.

9. (Amended) An isolated gene that encodes a nematode LOV-1 protein, comprising the nucleic acid molecule of claim 1.

15. (Amended) An isolated nucleic acid molecule that encodes a mutant *Caenorhabditis* LOV-1 protein, wherein:

a *Caenorhabditis elegans* nematode expressing the mutant protein exhibits defective mating behavior;

a nematode that expresses such defect exhibits one or both of an altered location of vulva (Lov) and response phenotype; and

a wild-type LOV-1 protein is encoded by the nucleic acid molecule of claim 1.

27. (Amended) A transgenic *Caenorhabditis* species nematode, comprising the vector of claim 26.

29. (Amended) The transgenic nematode of claim 27, wherein:

the nematode is *Caenorhabditis elegans* (*C. elegans*); and

the vector or a gene-encoding portion is integrated into the *C. elegans* genome.

31. (Amended) The transgenic nematode of claim 27, wherein:

the nucleic acid molecule encodes a mutant *LOV-1* protein;

a nematode expressing the mutant protein exhibits defective mating behavior;

a nematode that expresses such defect exhibits one or both of an altered location of vulva (Lov) and response phenotype.

32. (Amended) The transgenic nematode of claim 30, wherein:

B7

the nucleic acid molecule encodes a mutant *LOV-1* protein;

a nematode expressing the mutant protein exhibits defective mating behavior;

a nematode that expresses such defect exhibits one or both of an altered location of vulva (Lov) and response phenotype.

49. (Amended) An isolated nucleic acid molecule of claim 15,

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comprising a sequence of nucleotides that encodes the sequence of amino acids set forth in SEQ ID No. 15.

42. (Amended) A transgenic *Caenorhabditis* nematode, comprising the

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nucleic acid molecule of claim 15.

74. (Amended) A method for identifying genes or regulatory factors involved in polycystic kidney diseases, comprising:

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mutagenizing *Caenorhabditis elegans* transgenic nematodes that contain a dominant negative *lov-1* transgene;

selecting nematodes or offspring thereof that exhibit a further loss in function of the *lov-1* transgene by observing mating behaviors; and

identifying the mutations and genes responsible for the loss.

76. (Amended) A method for identifying regulators and factors necessary for synthesis and transport of *LOV-1* protein;

preparing a transgenic *Caenorhabditis elegans* nematode that expresses a

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detectable marker linked to *LOV-1* protein;

mutagenizing the nematode;

selecting nematodes or offspring thereof that have altered patterns of expression of *LOV-1*; and

identifying the gene responsible for the alteration.

77. (Amended) A method for identifying transcriptional regulators of *lov-1*, comprising:

preparing a transgenic *Caenorhabditis elegans* nematode that expresses a detectable marker linked to *LOV-1* protein;

mutagenizing the nematode;

selecting nematodes or offspring thereof that altered levels of expression of the protein.

82. (Amended) A method for identifying genes or regulatory factors involved in polycystic kidney diseases, comprising:

treating *Caenorhabditis elegans* nematodes with a test compound or mutagenizing them;

selecting nematodes or the offspring thereof that exhibit altered clumping behavior when seeded on a lawn of bacteria, wherein:

an alteration in the behavior is indicative of change in the genotype of the *lov-1* locus, such that the wild-type males exhibit clumping behavior, and males with a mutation in the *lov-1* locus that alters activity of the LOV-1 protein are randomly dispersed in the bacterial lawn;

mutagenizing the nematodes that are randomly dispersed in the bacterial lawn;

selecting males or the offspring thereof that exhibit a partial or complete restoration of the wild-type behavior;

analyzing the mutations of the males or the offspring thereof that exhibit a partial or complete restoration of the wild-type behavior; and

identifying the genes or mutations responsible for the restoration.

83. (Amended) The method of claim 82, wherein the genes or mutations are genetic supressors of *lov-1* mutants.